



HOMEmade ICEcream, SHERBET, AND ICES

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HOMEMADE ICE CREAM is easy to make and good to eat. This publication gives directions for making ice creams, sherbets, and ices in a hand or electric crank freezer or in a freezer tray.

Frozen desserts made with milk products are nutritious. Using ice cream, ice milk, or sherbet is an easy way to add more milk to the diet. One cup of ice cream can have the same amount of calcium as one-half cup of milk. Because sherbets are made with both milk and fruit, they contain more nutrients than ices, which are made with fruit juices as the only liquid.

Homemade ice creams vary considerably in milk fat. Recipes in this circular made with half-and-half and milk contain about 8 percent milk fat. If part of the milk or half-and-half is replaced by whipping cream, the fat content will, of course, be considerably higher. The fat content can be lowered by substituting instant nonfat dry milk, fresh skim milk, or buttermilk for the milk and half-and-half.

Commercial ice creams sold in Illinois must contain at least 10 percent milk fat. The exception to this is strawberry ice cream and other ice creams in which the flavoring used makes an ice cream with more bulk. Some brands of ice cream contain more than 10 percent milk fat. These are usually more expensive. There are a number of frozen products on the market in which the milk fat has been replaced by vegetable fats. These usually sell at a lower price than ice cream.

The number of calories in homemade ice cream, sherbets, and ices will vary with the amount of fat in the milk, with the kind and amount of sweetening and flavoring, and with the volume of air incorporated into the product during freezing. Even though ices contain no fat, they are high in calories because they contain large amounts of sugar, and ices do not increase in volume as much as sherbets and ice creams do.

A guide to the approximate number of calories in one-half cup of frozen dessert made according to recipes in this publication is given below.

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Supplies Needed for Making Ice Cream

Milk products used in homemade frozen desserts include fresh milk (whole, 2%, skim, and buttermilk), instant nonfat dry milk, half-and-half, whipping cream, evaporated milk, or a mixture of these. The higher the milk fat content of the milk mixture, the smoother and richer the product. Milk products higher in milk fat can be substituted for the lower fat milks used in any of the recipes.

Sweetening — The amount of sugar may be increased or decreased slightly to suit personal taste. Be careful not to oversweeten because too much sugar will mask the flavor, and overly sweet products are not as refreshing as less sweet ones. Also, too much sugar slows down the freezing process.

Other sweetening agents such as corn syrup, strained honey, maple syrup, and sorghum may be used to replace part of the sugar. A strong-flavored sweetener may be too overpowering in the finished product, so be careful in making substitutions.

Flavorings — For best flavor use high-quality flavorings or extracts. Lemon juice is used in most fruit sherbets and ices to enhance the fruit flavor. Because of the variation in the tartness of fruits and fruit juice, you may need to use less or more lemon juice than is stated in the recipe. Be sure to taste mixes before you add lemon juice. Add enough lemon juice to give the mix a slightly tart taste. If a fruit is extremely tart, you may need to use more sugar.

Gelatin in frozen desserts helps prevent the formation of large ice crystals and thus adds smoothness. It is important that you follow recipe directions carefully when using unflavored gelatin. (Also see answer to second question on page 11.)

Cornstarch and flour are sometimes used as thickeners for cooked mixes. They contribute body and smoothness to frozen desserts. However, they are not as efficient as gelatin in binding water and preventing coarseness.

Eggs may be used to thicken cooked mixes or they may be used to increase the volume. They also add color and flavor. Ice creams made with a cooked custard base are smoother than those made from uncooked custard mixes. Be sure to use only clean, sound eggs.

Food coloring may be added to improve the appearance of any frozen dessert mix. Use food coloring only to enhance the natural color or to tint the food. Many persons consider food that has been highly colored unappetizing.

Ice — For a hand or electric crank freezer you must use crushed ice. This gives more surface area, permitting the salt to melt the ice more rapidly to promote efficient freezing.

Rock salt is preferred to table salt for freezing mixtures because it is easier to use and costs less.

General Directions for Freezing in a Hand or Electric Crank Freezer

1. Prepare the mix and cool it.
2. Thoroughly wash and scald the can, cover, and dasher. Because milk products are ideal media for bacterial growth, good sanitation principles must be observed.
3. Pour the mixture into the can. Do not fill the can more than two-thirds full. The mixture will expand in freezing. This is called "overrun." However, if the can is less than half-full, the mixture will not whip and freeze properly.
4. Place the can of mix in the freezer tub. Put the dasher, cover, and crank mechanism in the proper position.
5. Use the following proportions of salt to ice: for ice cream use 1 pound of salt to 6 to 8 pounds of ice. For sherbets and ices use 1 pound of salt to 3 to 4 pounds of ice. Start packing with a layer of crushed ice first. Cover with a layer of salt. Continue layering with ice and salt until can is completely covered. Add a small amount of water — about one to two cups. This will hasten the freezing. Place the freezer tub in a larger shallow container to protect the floor or grass from salt brine.
6. Begin turning the crank of hand freezers slowly at first and then faster as the freezing process starts. The mixture is frozen when the turning becomes difficult. Most mixtures freeze in 15 to 30 minutes. If an electric-powered freezer is used, follow the manufacturer's directions.
7. Be sure that the hole for draining the melted ice and salt mixture is open at all times during freezing. If the hole becomes plugged, the brine may get into the ice cream mixture.
8. Remove the crank mechanism, cover, and dasher. Cover the frozen mixture with waxed paper, plastic wrap, or foil. Wash cover, then plug the opening in it before replacing on container. Pack the

freezer with crushed ice and salt and allow the ice cream to harden for about two hours. This hardening period improves flavor and texture. If you wish, you may remove the container from the freezer tub and place the ice cream in a home freezer to harden for a couple of hours.

9. Dispose of salt-ice mixture used in the freezer tub by pouring it into a sink with plenty of running water. Pouring it on the lawn can ruin the grass.

10. Remember, homemade ice cream, sherbets, or ices are best when eaten the same day they are made. The ice crystals in homemade frozen desserts are larger than in commercial ones. Ice crystals grow in size during storage. Hence, homemade frozen desserts become unsatisfactory upon prolonged storage.

Crank Freezer Recipes

PLAIN VANILLA ICE CREAM

3 eggs	1½ tablespoons pure
1¾ cups sugar	vanilla extract
3 cups milk	¼ teaspoon salt
4½ cups half-and-half	

Select clean, sound eggs. Beat eggs until light. Add sugar and milk. Stir until sugar is dissolved. Add remaining ingredients. Freeze in an ice cream freezer using 1 part salt to 6 parts crushed ice. Yield: about 3 quarts.

NOTE: This ice cream is not as smooth and does not store as well as ice cream containing gelatin, cornstarch, flour, or cooked custard mixtures. If a smoother ice cream is desired, make a cooked custard of the eggs, sugar, and milk. Cool this mixture before adding other ingredients. See directions under Homemade Vanilla Ice Cream on page 6, to make a custard.

For chocolate ice cream combine milk, sugar, and 5 ounces of unsweetened chocolate in a heavy saucepan. Place over low heat until chocolate is melted. Beat with a rotary beater until smooth. Add this hot mixture slowly to the beaten eggs. Return to low heat. Cook, stirring constantly, until the mixture is slightly thickened. Cool before adding the remaining ingredients.

For coffee ice cream dissolve ¼ cup instant dry coffee in ½ cup hot water, then add this to the egg-sugar mixture. Omit vanilla.

For fruit ice cream add 2 to 3 cups sweetened crushed or pureed fruit to mixture. To insure an even distribution of crushed fruits or nuts, add these ingredients after the mixture is partially frozen.

HOMEMADE VANILLA ICE CREAM

(adapted from USDA recipe)

2 cups sugar	4 eggs
¼ cup cornstarch	2 tablespoons vanilla
¼ teaspoon salt	6 cups half-and-half
2 cups milk	

Mix sugar, cornstarch, salt. Blend in 2 cups milk and 2 cups of the half-and-half. Cook over low heat, stirring constantly, until thickened, about 12 to 15 minutes. Beat the eggs. Stir a small amount of the hot cornstarch mixture into the beaten eggs; then stir the eggs into the remaining cornstarch mixture. Cook over low heat, stirring constantly, for 4 to 5 minutes. Chill thoroughly. (This is essential for a smooth ice cream.) Stir in vanilla and remaining 4 cups of chilled half-and-half. Freeze in a gallon ice cream freezer using 1 part salt to 6 parts crushed ice. Yield: about 3½ quarts.

LOW-FAT VANILLA ICE MILK

(adapted from USDA recipe)

2 cups sugar	3 eggs, beaten
¼ cup cornstarch	½ cup water
¼ teaspoon salt	1 tablespoon un-
2 quarts skim milk	flavored gelatin
(may be made from	1½ tablespoons vanilla
instant nonfat dry milk)	

Mix sugar, cornstarch, and salt in a heavy pan. Gradually add 1 quart of the skim milk. Cook over low heat, stirring constantly, until mixture is thickened (12 to 15 minutes).

Stir a little of the hot cornstarch mixture into the beaten eggs; then stir the eggs into the remaining cornstarch mixture. Cook over low heat, stirring constantly, for 4 to 5 minutes. Soften gelatin in ½ cup of water for 5 minutes. Stir into hot mixture. Chill thoroughly. (This is essential for a smooth ice cream.)

Stir in vanilla and remaining 1 quart skim milk. Pour into a 1 gallon ice cream freezer and freeze. Use 1 part salt to 6 parts ice. Yield: about 3½ quarts.

NOTE: Two percent or regular homogenized milk may be substituted for part or all of the skim milk. Use of milks containing higher milk fat will make ice cream of improved flavor and texture.

BASIC RECIPE FOR FRUIT SHERBETS OTHER THAN LEMON

3 cups milk	2 to 4 tablespoons fresh,
1 cup sugar	frozen, or canned
1 1/4 cups fruit juice	lemon juice
or fruit pulp	1/8 to 1/4 teaspoon salt,
	if desired

Mix milk and sugar. Add lemon juice to fruit juices or pulp and taste for tartness. Add more lemon juice if necessary. Gradually add fruit mixture to milk, stirring constantly. Freeze using 1 part salt to 4 parts ice. Yield: about 1 1/2 quarts.

NOTE: This sherbet may curdle at first, but when done it is smooth and creamy. For a smoother product use 1 tablespoon of gelatin that has been softened in 1/2 cup of cold water for 5 minutes and then dissolved over low heat before adding to the rest of the mix.

Orange sherbet will taste even better if you add 1 tablespoon grated orange rind.

LEMON SHERBET

2 quarts milk	1 1/2 cups lemon juice
1/2 teaspoon salt	2 tablespoons lemon
3 cups sugar	rind

Combine milk, salt, and sugar. Stir until sugar is dissolved. Add lemon juice and rind very slowly to milk, stirring constantly. Freeze in a gallon crank freezer. Use 1 part salt to 4 parts ice. Yield: about 3 1/2 quarts.

NOTE: This sherbet may appear curdled at first, but when frozen it is smooth.

BASIC RECIPE FOR ICES

1 tablespoon unflavored gelatin	4 cups fruit juices
	2 to 4 tablespoons
1/2 cup cold water	lemon juice
2 cups sugar	

Soften gelatin in the 1/2 cup of cold water for 5 minutes. Make a hot syrup of the sugar and 1 cup of the fruit juice. Dissolve the softened gelatin in this hot sirup. Add remaining ingredients. Cool before freezing. Freeze using 1 part salt to 4 parts ice. Yield: 2 quarts.

NOTE: For sweetened fruit juices use less sugar; for very tart juices use more. Be sure to taste fruit juices and add enough lemon juice to make the mixture tart.

General Directions for Freezing in a Freezer Tray

1. Follow your refrigerator instruction book for freezing frozen desserts.

2. Prepare the mixture. Pour into a **cold** freezer tray. Freeze until partly frozen or completely frozen, whichever the recipe directs. A mixture is considered partly frozen when at least 1 inch around the edges is frozen.

3. Place the partly or completely frozen mixture into a **chilled** bowl and beat until smooth but not melted. If mixture is completely frozen, you will need to use an electric beater. Beating the mixture once during the freezing process will make a more velvety dessert. Beaten egg whites, whipped cream, nuts, fresh fruit, or crushed candy are usually added at this point.

4. Return the beaten mixture to the chilled tray. Freeze until firm.

5. Cover the frozen mixture with waxed paper, plastic wrap, or foil.

Freezer Tray Recipes

VANILLA ICE CREAM

1 cup milk	1 teaspoon vanilla
2 egg yolks	2 egg whites
$\frac{1}{3}$ cup sugar	2 tablespoons sugar
$\frac{1}{4}$ cup cold water	1 cup whipping cream or
2 teaspoons unflavored gelatin	chilled evaporated milk

Mix milk with the egg yolks and $\frac{1}{3}$ cup sugar. Cook over low heat, stirring constantly, until mixture coats the spoon. Soften gelatin for 5 minutes in cold water. Add to hot custard mixture. Cool. Add vanilla. Whip the egg whites until foamy; add 2 tablespoons sugar and beat until a stiff meringue is formed. Fold meringue into the cooled custard. Freeze to a slush. Whip the cream or evaporated milk. Fold into slushy custard and freeze. Yield: about 1 quart.

NOTE: To whip evaporated milk you must chill the milk until it is icy cold. Place in a chilled bowl to whip.

To make flavored ice creams, proceed as in making vanilla ice cream, adding the flavoring material at the time the whipped cream is mixed with the partly frozen custard. Be sure the fruit or syrup is thoroughly chilled before adding to the cooled cooked custard.

English toffee, mint stick, chocolate chip — 4 ounces.

Strawberry, apricot, pineapple, raspberry — $\frac{1}{3}$ cup of sweetened fruit.

Chocolate — Use $\frac{1}{2}$ cup of sugar instead of the $\frac{1}{3}$ cup called for

in the recipe. Add $1\frac{3}{4}$ tablespoons of cocoa to custard before cooking it. If desired, 1 ounce of melted unsweetened chocolate may be used instead of the cocoa.

Nut — Add $\frac{1}{4}$ to $\frac{1}{2}$ cup chopped nut meats. Flavor to taste. Walnuts and maple extract make a good combination. If you like black walnuts, try combining them with black walnut extract. Cut vanilla to half or omit if other flavorings are being used.

Cherry — $\frac{1}{4}$ to $\frac{1}{2}$ cup of chopped cherries.

Banana — Mash two large, well-ripened bananas.

ICE CREAM FROM FROZEN FRUIT CONCENTRATES

1 can frozen fruit concentrate

1 cup whipping cream (or chilled evaporated milk)

sugar as directed below

Defrost fruit juice to a mushy consistency. Whip cream or **chilled** evaporated milk in a **chilled** bowl. Gradually add sugar and concentrated juice. Continue beating until fluffy. Pour into freezer tray and freeze until firm (about 2 hours). Yield: about 3 cups.

Sugar amounts for concentrated frozen juices:

Tangerine — $\frac{1}{4}$ cup sugar

Orange — $\frac{1}{4}$ cup sugar

Grapefruit-orange — $\frac{1}{3}$ cup sugar

Sweetened lemonade — no sugar

Grape — no sugar (add 1 tablespoon lemon juice, if desired)

BASIC FRUIT SHERBET

2 teaspoons unflavored gelatin	1 to 2 tablespoons lemon juice
$\frac{1}{2}$ cup cold water	1 cup crushed fruit
$\frac{3}{4}$ cup sugar	2 tablespoons sugar
2 cups milk	1 egg white

Soften gelatin for 5 minutes in cold water; dissolve over hot water or low heat. (See answer to second question on page 11 for more detailed directions.) Combine $\frac{3}{4}$ cup sugar, milk, lemon juice, and fruit. Stir in gelatin. Pour into freezer tray. Freeze until partly frozen. Put in chilled bowl and beat until smooth. Beat egg whites until foamy. Add 2 tablespoons of sugar and beat to form a stiff meringue. Fold meringue into frozen mixture. Return to tray. Freeze. Yield: about 5 cups.

For *buttermilk sherbet* substitute 2 cups buttermilk for the milk. Omit the lemon juice.

FRUIT SHERBETS MADE FROM FLAVORED GELATINS

1 package (4 ounces) flavored gelatin	2 to 4 tablespoons lemon juice
1 cup boiling water	2 teaspoons grated
1 quart whole milk	lemon rind, if
1½ cups sugar	desired

Add 1 cup boiling water to flavored gelatin. Stir until dissolved. Add milk, sugar, lemon juice, and lemon rind, if desired. Taste for tartness, adding more lemon juice if needed. Pour into two freezer trays and freeze rapidly to a mush. Beat and quickly return to trays. Freeze. Yield: about 7 to 8 cups.

NOTE: Do not use quick-setting flavored gels. Instructions from manufacturers of these gels specify they are not to be used with milk.

GRAPE-BUTTERMILK SHERBET

(USDA recipe)

1 tablespoon unfla- vored gelatin	1 six-ounce can frozen concentrated grape
¾ cup sugar	juice, thawed
½ cup cold water	2¼ cups buttermilk

Mix gelatin and sugar thoroughly in small saucepan. Add water and place over low heat, stirring constantly until gelatin is dissolved. Empty thawed grape juice into bowl; add buttermilk. Stir in gelatin mixture. Pour into freezer tray. When mixture is partly frozen, put it in a chilled mixing bowl and beat until smooth. Return mixture to freezer tray and freeze until firm. Yield: about 4 to 5 cups.

LOW-FAT SHERBET WITH NONFAT DRY MILK

1 cup sweetened fruit juice or sieved fruit	1 cup water
¼ cup lemon juice	2 egg whites
1 cup instant nonfat dry milk	¼ cup sugar

Combine sweetened fruit juice or sieved fruit and lemon juice. Taste for tartness, adding more lemon juice, if necessary. Blend well. Mix dry milk and water. Slowly stir the fruit mixture into the milk. Pour mixture into freezer tray and freeze until almost firm. Beat egg whites until foamy; add ¼ cup sugar; beat to form a stiff meringue. Keep the meringue in refrigerator until you are ready to use it.

Remove frozen mixture from freezer tray to a chilled bowl. Whip

with a rotary or electric beater until creamy and fluffy. Fold meringue into beaten mixture. Return to freezer tray (or trays) and freeze until firm. Yield: about 1 quart.

Apricot sherbet: use 1 cup apricot nectar or sieved apricots.

Pineapple sherbet: use 1 cup pineapple juice or crushed pineapple.

Strawberry sherbet: use 1 cup sweetened crushed strawberries.

Questions and Answers

What's wrong when mixtures do not freeze satisfactorily in a crank type freezer?

Probably the ice is not crushed fine enough or you are using too little salt. If your freezer tub leaks, the brine level cannot rise to the top overflow hole. This will prevent efficient heat transfer. Too much sugar slows down freezing.

Is there any special trick to using unflavored gelatin in unheated mixes?

Unflavored gelatin must be softened and dissolved before using. To soften gelatin, sprinkle it over cold liquid; allow 5 minutes for gelatin to absorb liquid and become soft. Then melt over hot water or very low heat just until thoroughly dissolved. If very warm dissolved gelatin is stirred into a large amount of cold liquid, it may solidify. This can be avoided by stirring a small amount of cold liquid into the barely warm dissolved gelatin and then stirring this mixture into the remaining cold liquid.

Why does ice cream that is stored in the freezer for a few days become hard and icy?

Homemade ice cream, because of its low solids and high water content, cannot be stored more than a few hours without developing large ice crystals and becoming brittle. For best enjoyment, homemade ice cream should be eaten the day it is made.

How can large ice crystals be prevented from forming on the surface of ice cream stored in freezer trays?

Keep the ice cream lightly covered with waxed paper, plastic wrap, or foil. Maintain a constant freezing temperature; avoid thawing and refreezing.

Can ice creams and other frozen desserts be made with non-caloric sweeteners?

Yes. Recipes may be obtained from manufacturers of non-caloric sweeteners.

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